

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
28 July 2005 (28.07.2005)

PCT

(10) International Publication Number
WO 2005/068867 A3

(51) International Patent Classification⁷: F16D 41/08,
B60K 17/26, 17/35

(21) International Application Number:
PCT/US2005/001288

(22) International Filing Date: 14 January 2005 (14.01.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/537,247 14 January 2004 (14.01.2004) US

(71) Applicant (for all designated States except US): TIMKEN
US CORPORATION [US/US]; 59 Field Street, Torrington,
CT 06790 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): JOKI, Mark, A.
[US/US]; 5930 North American Road, Dover, OH 44622
(US).

(74) Agent: GLENN, Massina, M.; Michael Best & Friedrich
LLP, 100 East Wisconsin Avenue, Milwaukee, WI 53202-
4108 (US).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY,
TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU,
ZA, ZM, ZW

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,
SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,
GQ, GW, ML, MR, NE, SN, TD, TG).

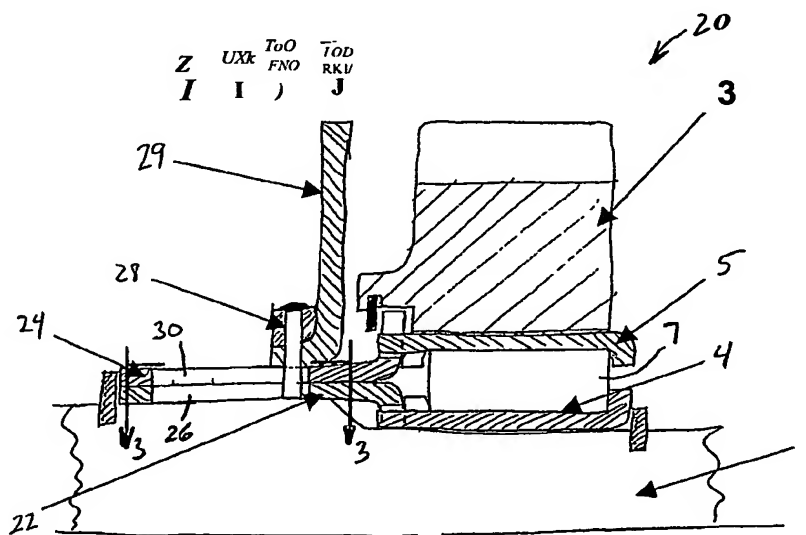
Published:

— with international search report

(88) Date of publication of the international search report:
19 January 2006

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: FOUR WHEEL DRIVE SYSTEM



(57) Abstract: A "torque-on-demand" ("TOD") four wheel drive system comprising a slipper clutch or roller clutch (20) positioned between a first rotatable component (1) and a second rotatable component (3). The clutch comprises a first tubular component (22) having a first axial slot (26) and a second tubular component (24) having a second axial slot (30). A control pin (28) extends through and is axially moveable within the first and second slots (26, 30). One of the first or second slots has a constant circumferential width W and the other of the first and second slots has at least first (32) and second (34) portions along its axial length with the first and second portions having different circumferential widths. Axial movement of the control pin

WO 2005/068867 A3